DOCUMENT RESUME

ED 066 617 VT 016 573

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| AUTHOR | Worthington, Robert M. |
| TITLE | Education and the Post-Industrial Society. |
| PUB DATE | 14 May 72 |
| NOTE | 12p.; Presentation at the Spring Commencement Exercises at Eastern Kentucky University (Richmond, Kentucky, May 14, 1972) |
| EDRS PRICE | MF-$0.65 HC-$3.29 |
| DESCRIPTORS | Career Education; *Education; *Educational Objectives; Higher Education; *Industrialization; *Social Change; Speeches; *Technology |

ABSTRACT

Technology's continued advance has created as much anxiety and fear as it has satisfaction. Movements of criticism and opposition to the current state of scientific civilization have been caused by factors such as the discovery and use of nuclear weapons, the gap between the rich nations and the underdeveloped countries of the world, and to "future shock" which is described by Toffler as the disorientation of individuals due to too much change too fast. In the future, there will be only two kinds of people--the victims of "future shock" and the victors over it. To be victorious, one must recognize that there are two distinct problems regarding the post-industrial society. The first problem is taking full advantage of the opportunities accompanying super-industrialism. The second is avoiding the unfortunate consequences which flow from the improper exploitation of these opportunities. Along these lines the central task of education for the future is to expand the adaptive capabilities of individuals and to teach individuals to be critical receivers of orders. (JS)

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# EDUCATION AND THE POST-INDUSTRIAL SOCIETY

PRESENTED BY

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Address presented at the Spring Commencement Exercises at Eastern Kentucky University--Richmond, Kentucky, May 14, 1972

COMMENCEMENT ADDRESS

By our presence here today, you, your parents, and I are filling very traditional roles. Generations of graduates have sat restlessly in their hot black gowns as they were bored by longwinded speakers pontificating about the same time-worn themes. Generations of justly proud parents have watched anxiously as their sons and daughters received their degrees for they have suffered and worked for this moment fully as much as you have although in different ways. And generations of speakers have come to podiums on these same occasions to tell graduates about the responsibilities they must bear and the opportunities which await them in the Golden Age to come. And I wouldn't dream of depriving you of that same opportunity which I experienced here many --- years ago. I can't promise not to be boring but I can promise not to be longwinded.

It has been more than thirty years ago since I came to this campus in 1937 to prepare for a career as a teacher. I chose Industrial Arts because of the influence of a great teacher, Professor Ralph Whalin, who was then and still is today, in his 34th year at Eastern, concerned first and foremost about his students. He emphasized the importance of craftsmanship, of doing every job to the best of your ability. Professor Whalin, chosen by the faculty as the first faculty member to serve on Eastern's Board of Regents, exemplifies for me the greatness of Eastern!

While I have had occasion to return to the campus from time to time over the years, this weekend has given me a more leisurely opportunity to observe and to reflect upon the changes that have occurred at Eastern since my freshman days of more than three decades ago.

An initial and immediate reaction relates to the sheer growth and beauty of the campus. The buildings that have been erected on this campus in recent years show a genuine concern for providing a superior physical setting in order that the university may address itself to its three major functions, teaching, research, and public service.

A second reaction relates to the growth of the student population served by the university. From the thousand students who were my classmates this population has grown to more than 10,000 students. This is substantial evidence that the university is seeking to serve a wide range of student interests.

A third reaction must focus upon the quality of services and activities provided for the student body. The new University Center is an extraordinary example of the commitment of an institution to provide for this area of student needs. The lecture and concert programs of the university are as rich in quality and variety as one might find at any university in the country.

A fourth reaction relates to the expansion of the research and public service role of the university. For example, Eastern is presently operating two projects in Pikeville concerned with career education. These projects are receiving considerable national recognition for their quality and productivity. They are examples of what an imaginative university can do if it accepts seriously its role to serve the people of its region.

My final reaction, and I have reserved it because it is the most important, relates to curriculum changes that have occurred here particularly beginning in the mid-sixties with the achievement of university status.

It is very obvious that the far-sighted leadership of President Robert P. Martin and the Board of Regents, in their organizational plan for a university, envisioned a rapidly changing role for the institution. The customary upper division Colleges of Arts and Sciences, Business, and Education became partners with a new type of College devoted to career education, the College of Applied Arts and Technology. New fields of study in law enforcement, corrections, nursing, food service technology, industrial technology, and horticulture emerged. Fields that prepare students for the world of work after two years of study but with career ladders available for further study at the baccalaureate and graduate levels. Many four year colleges and universities are just now beginning to see the possibilities of these kinds of programs. The expansion of Eastern's graduate school programs, new curricula in Arts and Sciences, Business, and Education has been remarkable. Programs of study are being offered in these academic units that were unheard of when I was a student at this institution. Dr. Martin's election this year to the Presidency of the American Association of State Colleges and Universities is recognition of the quality of his leadership in building a dynamic and responsive institution. He has indeed led Eastern toward a vision of greatness.

In just a few short decades this institution changed radically, but man himself has changed as well. He has attained, in great measure, a goal which he has long anticipated and desired. He has become in Descartes' phrase, "the master and possessor of nature." He has precipitated a scientific and technological revolution which continues at an ever-increasing pace and has largely accomplished the substitution of knowledge for labor as the principal force of production within our society.

During the past 60 years, man has broken sharply with all human experience; he has reversed his relationship to the earth's resources. Agriculture, the original basis of civilization, itself has lost its dominance. In the United States it now employs fewer than 6 percent of the economically active population. And today more than 50% of the non-farm labor force have ceased to wear the blue collar of the factory worker or manual laborer.

This incredible phenomenon of rapid social change has led Kenneth Poulding, a well known economist and imaginative social thinker, to proclaim the present moments as a "turning point" in human history. He asserts that, "the world of today is as different from the world in which I was born as that world was from Julius Caesar's. I was born in the middle of human history. To date, roughly, almost as much has happened since I was born as happened before. " The truth of this startling statement can be illustrated in a number of ways. For example, Alvin Toffler, in his book Future Shock, has observed that "if the last 50,000 years of man's existence were divided into lifetimes of approximately 62 years each, there have been 800 lifetimes (to date). Of these, fully 650 were spent in caves. Only during the last 70 lifetimes has it been possible to communicate effectively from one lifetime to another, as writing has made it possible to do. Only during the last 6 lifetimes did masses of men see the printed word. Only during the last 4 has it been possible to measure time with any precision. Only in the last 2 has anyone anywhere used an electric motor. And the overwhelming majority of all the material goods we use in daily life today have been developed within the present, the 800th lifetime." In summation then,

man has spent 10,000 years for agriculture, a century or two for industrialism, and now opening before us what Toffler terms "the age of super-industrialism or the "post-industrial society."

These tremendous scientific and technological achievements, however, have taken on an increasingly problematic character. After three centuries during which they were regarded almost universally as the supreme means of solving human problems, they have now come to be seen by many people as the source of problems which they are perhaps unable to solve. For example, in the field of medicine, we now have more new treatments and cures than ever before with the result that the medical profession has become increasingly differentiated and specialized and tends to concentrate its efforts in a few major urban centers of medical excellence. The obvious corollary to this fact is that the availability of adequate medical care elsewhere is declining. And although there have been marvelous transportation improvements, mass communication innovations, and the like since World War II with resultant benefits to education, journalism, commerce, and sheer convenience, these have also been accompanied by a rise in social unrest.

Technology's continued advance has created as much anxiety, and even fear, as it has satisfaction; and these sentiments have begun to take form in movements of criticism and opposition to the current state of scientific civilization. For example, you may recall that in 1969 a group of scientists from the Massachusetts Institute of Technology tried to organize a nationwide work stoppage on all scientific projects until some serious thought and analysis could be given to the direction and consequences of our "super-industrial" technology. And recent years

have also witnessed the advent of the counter culture with its emphasis on a more simplistic form of life in close communion with nature.

What, you may ask, has precipitated these types of reactions? Initially, no doubt, it was the discovery and use of nuclear weapons that produced these widespread doubts as to whether increasing scientific knowledge could be equated with increasing human happiness. The menace of nuclear war has kept these doubts alive; and they have been strengthened by other, unwelcome byproducts of technological advance such as the population explosion, pollution of the environment, depletion of natural resources, occupational and social dislocations, and threats to privacy and the political significance of the individual.

We have now reached in human history, however, the point of recognition of the multiplicity of time and space. Because of transportation and communication innovations, contemporary man can experience a thousand lives in a thousand places all in one moment. Every seasoned reporter has had the experience of working on a fast breaking story that changes its shape and meaning before his words are put down on paper. Today, the whole world is a fast breaking story. There are no longer any national boundaries. The network of social ties is so tightly interwoven that the consequences of contemporary events radiate instantaneously around the world.

Heavy consumption of the world's natural resources here in the United States widens the enormous political, economic, and social gaps between our country and less developed nations.

Marshall McLuhan notes that the "medium, or process, of our time-electronic technology is shaping and restructuring patterns of social interdependence and every aspect of our personal lives. It is forcing us to reconsider and reevaluate practically every thought, every action, and every institution formerly taken for granted. Everything is changing: you, your family, your neighborhood, your education, your job, your government, your relation to others. And they are changing dramatically." McLuhan claims that "time has ceased, space has vanished, that we now live in a global village, a simultaneous happening" in which every action taken by an individual is likely to have an ecological, economic, political and social repercussions of which we may not even be aware. John Donne's famous phrase that "No man is an island," rings particularly true today. Fortunately, most people now realize that unbridled scientific growth and technological innovation are no longer self-evident goals. Thus, the way is open for young men and women such as yourselves to decide the future form of your social lives and the contribution you can make to your country and to mankind.

What Toffler calls "future shock" - the shattering stress and disorientation that we induce in individuals by subjecting them to too much change to fast - can be arrested by controlling both the rate as well as the direction of change in your personal lives and society at large. Although increased technology and rapid social change have heretofore been portrayed as the protagonists which intensify existing social problems they contain within them the seeds of man's liberation.

For it is only through controlled change and inventive technology that man can cope with the problems of the future.

In the years to come, there will be only two kinds of people the victims of "future shock" and the victors over it. Traditionally, the colleges and universities have prepared individuals to meet these types of challenges, and I am sure that the education you have received here at Eastern Kentucky University has equipped you with the ability to recognize and adapt to rapidly changing social, economic, and political conditions. You have acquired the tools for humanizing the future in a time when we have broken so irretrievably with the past.

Some of you may be tempted to ask yourselves, "Why bother - why not drop out; why not try to turn the clock back to some more pristine form of existence? Wouldn't that enhance my potential for individual freedom in this confusing, rapidly changing world?" This response, I think, would be a mistake, for while sentimentalists prattle about the supposedly unfettered freedom of the primitive man, evidence collected by anthropologists and historians alike contradicts them. John Gardner, the former Secretary of Health, Education and Welfare, put the matter tersely when he said: "the primitive tribe or pre-industrial community has usually demanded far more profound submission of the individual to the group than has any modern society." As an Australian social scientist was told by a Temne tribesman in Sierra Leone: "When Temne people choose a thing, we must all agree with the decision --- this is what we call co-operation." This is, of course, is what we call conformity.

Thus while the post-industrial society might appear to herald a decline in personal freedom, the elevation of the group above the individual, and a submersion of the individuals' political significance, these results are by no means foregone conclusions. Increased personal freedom and responsiveness by government to the needs of the individual will not come about automatically. It will become a matter of the wise and creative implementation of technology itself. In his study of the effects of technology on the future of society, Emanuel Mesthene, of Harvard University said that if we wish to preserve even modified democratic values in a multibillion person society, then increased uses of the computer, mass data processors, and new communications networks are an absolute necessity.

Using an analogy from ballet: as the set becomes more complex, the choreography required to maintain a given level of coordination becomes far more difficult. The computer, modern data processors, and new tele-communications networks provide the refinement and the means to treat people both as individuals and as a part of society as a whole.

Mesthene also recognized that the central problem about technological advance is that "while it creates new possibilities for human choice and action, it leaves their disposition uncertain." Thus, what its effects will be and what ends it will serve are not inherent in technology itself, but depend on what man will do with technology.

Technology thus makes possible a future of open ended options but only if you realize that it can have both positive and negative effects, usually both at the same time. There are two distinct problems then in the age of super-industrialism. The first is a positive one taking full advantage of the opportunities it offers. The second is a negative one avoiding the unfortunate consequences which flow from the improper exploitation of these opportunities. The more technological the world becomes, the more essential will be the need for critical thinking on the part of the individual.

Sociology tells us that pace and complexity of modern urban living cause much of the alienation that exists in society today. But this is merely additional evidence of the need for the individual to possess the capacity to adapt quickly to a changing world. Cybernetics, for example, has eliminated hundreds of blue collar occupations but has simultaneously created a multiplicity of new occupations that didn't exist even five years ago.

The point of all this is that you will have to be able to think critically as an individual and adapt to change quickly if you are to succeed in the future. The central task of your future education is to expand the adaptive capabilities you now possess. It is no longer sufficient to understand the past or even the present. You must now learn to make repeated, probabilistic, increasingly long-range assumptions about future jobs, family forms, human relationships, ethics, morals, technology, and organizational structures.

You must rethink every aspect of our post-industrial civilization. This is what social critics like Ralph Nader and Rachel Carson have been trying to tell us, that the unwelcome byproducts of increased technology and scientific innovation are with us today because it has up until now been no one's explicit business to foresee and anticipate them.

That is the task that faces you in the future. The education you have received here at Eastern Kentucky University has given you a start and a capacity to deal with the present. But you must constantly strive to increase understanding of the entire range of human motivations and emotions. Literature and the arts traditionally has supplied much of this insight, but you must now supplement these aids with technology itself. Through instant information retrieval and modern communications devices you can overcome the fragmentary approach which we have previously used to try to solve the world's problems. Because of technology we can now instantly absorb a sense of the whole subject - a gestalt of the world rather than just a grasp of the immediate or the provincial.

Thus if you have a firm grasp of the fact that technology can be both boon and burden at the same time, you will be able to begin to cope with the strains of a "super-industrial age." You must shift your education into the future tense, for in the years ahead, we cannot afford to let anyone become as Speer put it "an uncritical receiver of orders."

As each of you pass this significant milestone in your career, remember that education is a life long process. Continue your education not only to assure your own personal fulfillment in the years ahead but to help this great Nation of ours remain strong and free.

Congratulations and best wishes to all of you.